PATENT SPECIFICATION

652,466

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COMPLETE SPECIFICATION.

Improvements relating to Masonry Saws.

I, NELIGH CLAIR COATES, of Clipper Manufacturing Company, 2800 Warwick, Kansas City, Missouri, United States of America, a citizen of the United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in masonry saws and refers more particularly to a power saw employing a disc cutter mounted upon an adjustable head held rigid during the cutting operation.

Until the advent of power driven masonry saws it was usual practice to cut and form ceramics in building construction, furnace building, tile fitting and wherever bricks or tiles were to be laid by hand. Masonry saws employ a circular cutter blade rotated at high speed and formed of abrasives such as Carborundum or steel alloy rimmed with a diamond dust composition. The different types of saws are for different uses, Carborundum discs principally for open texture brick and tile, while diamond blade saws are used for the harder, closer texture bricks and tile and for glazed products. Experience in cutting these different types of ceramics has shown it to be preferable to have abrasive cutters of the Carborundum type resiliently mounted so shallow kerfs can be made during the cutting procedure permitting the operator to feed the cutter according to the ability of the cutter to sever the texture of the particular ceramic workpiece being cut. When the diamond blade is used the cutter head must be rigidly mounted, and the rapidity of feeding the blade to the work is then governed solely by the speed at which the work is fed to the cutter blade. When using the diamond blade cutter it is essential that a lubricant be fed to the cutter, no lubricant being used with blades of the Carborundum type.

An object of the present invention is to provide a masonry saw in which the cutter head which supports the rotating cutter blade is adjustable and may be fixed in any adjusted position.

Another object is to provide a cutter head which is easily adjusted vertically on the frame of the machine and after adjustment may be fixed to position the cutter in any desired position with reference to the workpiece.

A further object is to distribute lubricant evenly and uniformly to the cutting edge of the blade, excess lubricant being recirculated.

According to the invention, a masonry saw comprises a frame having front and rear uprights and a horizontal support therebetween, a workpiece carrier movable longitudinally of the horizontal support, a cutter head pivoted on and vertically adjustable upon the rear uprights, and an adjustment bar assembly connecting the cutter head and frame adapted to hold the cutter head rigid in any selected cutting position with respect to the horizontal support and workpiece carrier.

For lubricating the cutting blade the lubricant is supplied to opposite faces of the cutter, which is rotatably mounted on the cutter head. The lubricating means may comprise a guard carried by the head and surrounding the upper part of the cutter, means for introducing a lubricating fluid on opposite sides of the cutter, troughs on opposite sides of said cutter, each trough extending inwardly from the lower edge of said guard to a point adjacent the cutter whereby said troughs collect fluid thrown from the cutter, and each trough having a drain adapted to direct the fluid collected therein back on to the sides of the cutter.

In order that the invention may be easily

understood and readily carried into effect, a masonry saw constructed in accordance with the invention is illustrated by way of example, in the accompanying drawing in which;

Fig. 1 is a side elevational view of an apparatus embodying the invention with parts broken away.

Fig. 2 is an enlarged side view of the head adjustment mechanism.

Fig. 3 is a rear view of the mechanism shown in Fig. 2, and

Fig. 4 is a view taken along the line 4—4 in Fig. 1 in the direction of the arrows.

The frame or standard of the saw comprises front uprights or legs 10, rear uprights 11, and a horizontal support 12 which has the form of a tray or reservoir. Pivoted on pins 14 in notches 13 formed in the rear uprights 11, is the cutter head 15. This cutter head is a platform arrangement upon one end of which is mounted a motor 16 and on the opposite end a cutter disc 17. The shaft of the cutter disc is carried in suitable bearings indistinctly shown behind a screen guard 18 positioned around the V-belt which drives the cutter through pulleys on the motor and cutter shafts. Electrical power is supplied to the motor through conduits not shown. Also mounted on the head 15 and driven from the motor by a separate belt is a lubricant circulating pump 19. This pump takes suction from the standpipe 20 in reservoir 12 drawing the liquid up through flexible pipe 21 and discharging it through pipe 22 into a manifold 23 mounted on top of the guard 24 of the disc cutter. Depending pipes 25 on opposite sides of the guard have elbow shaped jets 25*a* which extend through holes in the guard and jet the lubricant on to the sides of the cutter remote from the outer cutting edge. Since the cutter is rotating at high speed the lubricant jetted against the sides of the cutter is projected outwardly along the sides of the cutter in the form of thin films.

Heretofore, where lubricant was supplied to the outer edge of the cutter, which is usual practice, the centrifugal force of the rotating cutter immediately threw it off, thus eliminating it from the edge of the cutting blade and materially reducing its lubricating effect. Application of lubricant to the edge of the cutter aggravated the spraying effect produced by centrifugal force of the cutter inconveniencing the operator and introducing other inefficiencies in the operation of the machine. Between the rear uprights and forming the rear wall of the reservoir 12 is a splash plate 26. Attached to the bottom of the cutter head and depending therefrom in front of the splash plate is a flexible curtain 27 preferably of canvas or other moisture-resistant material. The curtain and splash plate drain lubricant thrown from the rotating cutter back into the reservoir where it is recirculated through the pump 19 to the cutter. In the top of the standpipe 20 is a screen to eliminate contamination from the lubricant circulating system.

Removably attached to the front edge of the guard by set screw 42 is a trough 43. The inwardly projecting upturned edges of the trough extend into the guard and form gutters between the guard and sides of the cutter. These gutters collect excess lubricant and drain it back to the centre of the rotating cutter disc through spouts or baffles 43*a*. Thus, a constant, uniform film of lubricant is supplied to the edge of the cutter and excess lubricant is recirculated to the centre of the disc to be recombined with the films added through jets 25*c*. Lubricant thrown from the periphery of the disc during the cutting operation is drained back into the reservoir from curtain 27 and splash board 26.

On the underside of the cutter head platform and rearwardly of the uprights 11 are angles 28 whose depending flanges are perforated by holes. The holes in the two angle members are in alignment to receive pin 29 insertable in the holes and through a hole in the upper end of vertical rod 30. The lower end of rod 30 is gripped on opposite sides by clamping dogs 31. These clamping dogs are held in place by pins 32 which pivot the dogs to the ends of link members 33 shown best in Figs. 2 and 3. The ends 34*a* of yoke 34 are also pivoted to the lower pin 32, the front end of the yoke terminating in a threaded bolt 34*b*. Bolt 34*b* is screwed into the blank end 35*a* of adjustment tube 35 positioned below the horizontal support 12 and extending from the rear to the forward end of the frame. The front end of the tube is carried by a transverse support member between uprights 10 and has affixed thereto a handle 36. Between yoke 34 and the threaded rear end of tube 35 surrounding bolt 34*b* is a coil spring 37 constantly urging the yoke and tube apart and tending to separate and release the clamping dogs. An angle member or saddle 38 fitted to the lower rear edge of reservoir 12 serves as a support for the head adjustment assembly. The lower transverse flange of the saddle is cut away, as shown at 38*a*, to permit passage therethrough of the adjustment tube 35 and bolt 34*b* of the yoke. The upper lateral wings 38*b* of the saddle serve as supports for the ends of a pin inserted into vertically spaced holes 39 in the vertical bar 30 when the clamping dogs are released and the cutter head is to be raised or lowered to different notches of the uprights.

Beneath the cutter and on the top edges of the sides of the tray or reservoir 12 is a workpiece conveyor or carriage 40. This carriage has flanged wheels 41 operating in roller bearings, the wheels roll upon the top rims of the tray and permit the carriage to be moved back and forth beneath the cutter.

The brick or tile to be sawed is placed upon the carriage and the location of the cut determined by an adjustable scale 42. Handle 36 is unscrewed to release the clamping dogs 31 from the vertical bar 30. If the cutter head is too low and need be raised a pin is put through one of the holes 39 immediately adjacent the top wings 38*b* of the saddle and the front end of the head manually raised until the pin supports the weight of the head. Working upon the pin as a fulcrum, the front of the cutter head is raised until the pivot pins 14 are lifted out of their notches and lowered into notches which will position the head at a proper height. The pin which served as a support is then removed, the head levelled or angled to a correct position with respect to the workpiece, and handle 36 turned until the clamping dogs 31 are tightened firmly against opposite sides of the rod 30. Gripping of the rod by the dogs forms a rigid connection between the head and the frame locating the head in any selected position. If the head is too high, lowering the head is accomplished in much the same manner. The adjustment assembly is released by turning handle 36 in the opposite direction, a pin is inserted in one of the holes 39 of rod 30 and using the pin as a fulcrum the pivot pins 14 of the head are lifted from the notches in the uprights and lowered to notches below. The pin is then removed and the head is again tightened to rigid adjustment in the lowered position.

It will be noted that the upper portion of bar 30 is bent rearwardly giving the bar a dog-leg appearance and that the upper end of the bar is affixed to the head or platform of the head a short distance forward of its rear end. These two features of construction play an important part in raising and lowering the head. The bend in the bar 30 tends to shift the weight of the head rearwardly when it is manually raised or lowered in adjustment of the height of the head in the notches of the uprights. In other words, when the head is manually raised or lowered and the pintles or pivot pins shifted from one set of notches to another the weight of the head is automatically shifted toward the rear causing the pivot pins to move along the contours of the notches to the next position. This obviates a disadvantage experienced in raising and lowering the head when the rear bar was straight and fastened to the rear end of the head. Furthermore, moving the pivot between the upper end of bar 30 and the platform of the head forward shifted the fulcrum supporting the weight of the head and considerably reduced the weight which had to be lifted when the head was adjusted to another height. The edges of the uprights defining the contours of the notches have been rounded to facilitate head adjustments, the smooth rounded contours offering less obstruction, resistance and friction to free sliding movement of the pivot pins.

The object to be sawed, as stated, is placed upon the carriage 40 and the carriage is advanced by rolling it forwardly along the edges of the horizontal supports. During the cutting operation lubricant is supplied to the sides of the cutter through jets 25*a* as described,

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. A masonry saw comprising a frame having front and rear uprights and a horizontal support therebetween, a workpiece carrier movable longitudinally of the horizontal support, a cutter head pivoted on and vertically adjustable upon the near uprights, and an adjustment bar assembly connecting the cutter head and frame adapted to hold the cutter head rigid in any selected cutting position with respect to the horizontal support and workpiece carrier.

2. A masonry saw in accordance with Claim 1, wherein said adjustment bar assembly comprises a vertical bar having one end hingedly connected to the cutter head at a point spaced from the pivotal axis thereof, a clamping device supported on the frame and loosely embracing the shank of the bar, and means for tightening said clamping device on the bar to hold the cutter head in a selected cutting position.

3. A masonry saw in accordance with Claim 2 wherein the clamping device comprises opposed clamping dogs adapted to grip opposite sides of the vertical bar.

4. A masonry saw in accordance with Claim 2 or Claim 3 in which the vertical bar is supported on a horizontal rod carried by the frame.

5. A masonry saw in accordance with Claims 3 and 4, in which the said dogs are adjustable from the front of the frame by rotation of the horizontal rod.

6. A masonry saw in accordance with any of the Claims 1-5, in which notches in the rear uprights are engaged by pins which extend laterally from the cutter

head and constitute the vertically adjustable pivot for the cutter head.

7. A masonry saw in accordance with Claims 4 and 6, in which the opposed clamping dogs are positioned at different levels, so that when tightened they impose a rearward thrust on the upper end of the vertical bar and thus hold the pins firmly seated in the notches.

8. A masonry saw in accordance with Claim 2, 3 or 4, in which the vertical bar has vertically spaced holes in which a pin can be inserted to support the cutter head during vertical adjustment of the head.

9. A masonry saw in accordance with any of the Claims 2-8, in which the said vertical bar is bent to have its upper end located rearwardly of its lower end.

10. A masonry saw in accordance with Claim 2 or Claim 9, in which the said vertical bar is pivoted to the cutter head forwardly of the rear end of the head, whereby the fulcrum for the weight of the head in adjusting the head for height is advantageously shifted.

11. A masonary saw according to Claims 2 and 6, in which one end of the said vertical bar is hingedly connected to the cutter head at a point spaced rearwardly from the axis of said cutter head pins.

12. A masonry saw according to any preceding Claim, having a cutting disc and means for rotating the disc mounted on the cutter head, and a guard carried by the head and surrounding the upper portion of the disc, the side walls of the guard being spaced laterally from the sides of the disc and the lower edge of the guard being substantially radial to the disc's axis of rotation.

13. A masonry saw according to any one of the preceding Claims, having means for supplying lubricant to the opposite faces of a cutter mounted rotatably on the cutter head.

14. A masonry saw in accordance with Claim 14, in which the lubricant is jetted substantially normal to the plane of the cutter.

15. A masonary saw in accordance with Claim 13 or 14, in which a guard surrounds the upper part of the cutter and a trough extends inwardly from adjacent the lower edge of the guard and between the walls of the guard.

16. A masonry saw according to Claim 14, in which the lubricant is supplied through jets adjacent the axis of the saw.

17. A masonry saw substantially as illustrated in the accompanying drawing and described herein.

Dated this 26th day of August, 1948.

For the Applicant,

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[This Drawing is a reproduction of the Original on a reduced scale.]

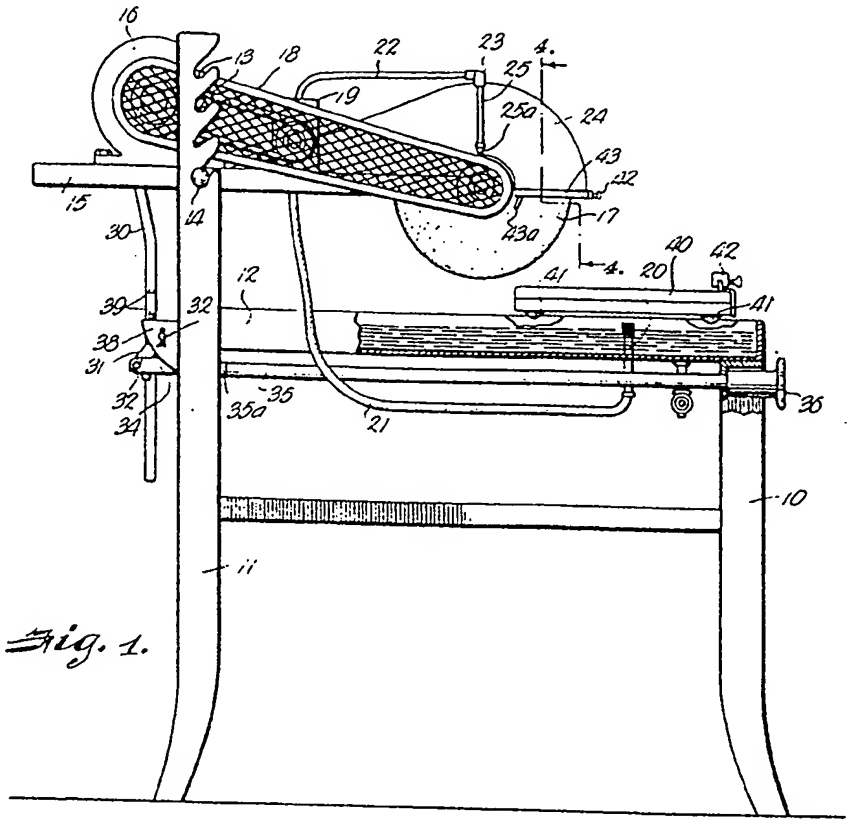


Fig. 1.

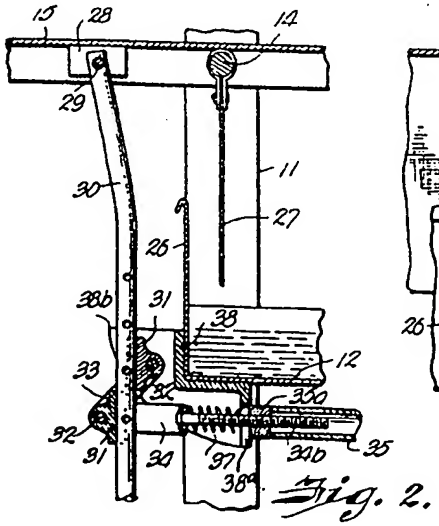


Fig. 2.

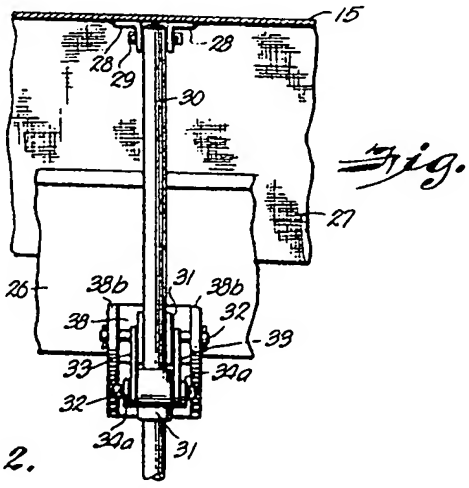


Fig.

SHEET 1

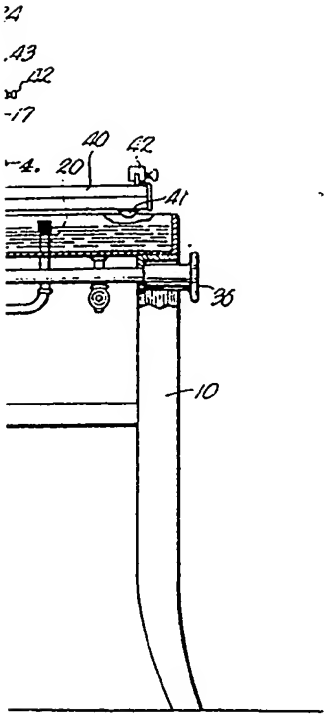
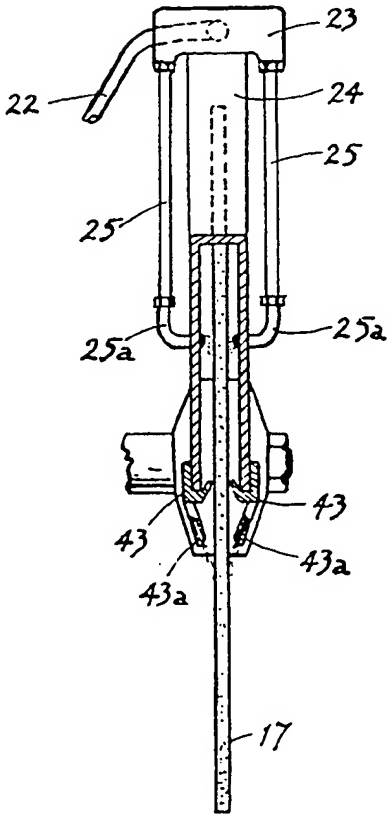


Fig. 3.

SHEET 2

Fig 4



H.M.S.O.(Ty.P.)

652,466 COMPLETE SPECIFICATION

2 SHEETS

SHEET 1

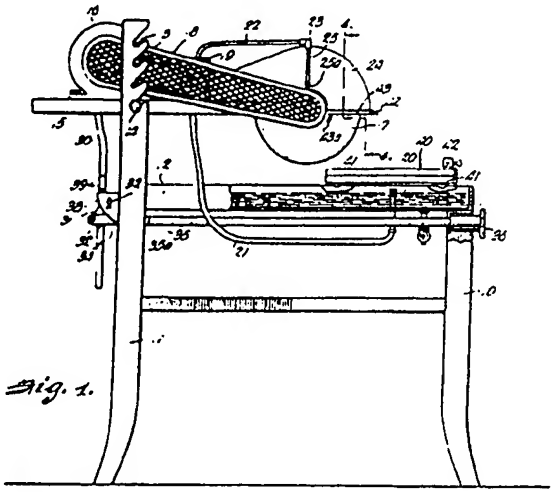


Fig. 1.

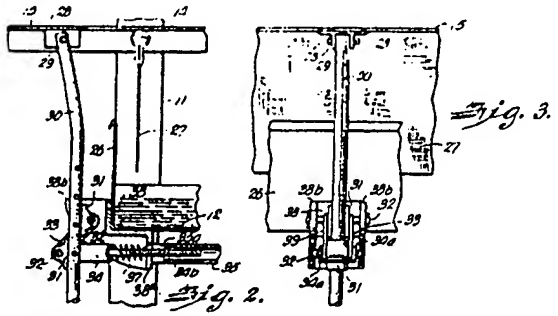
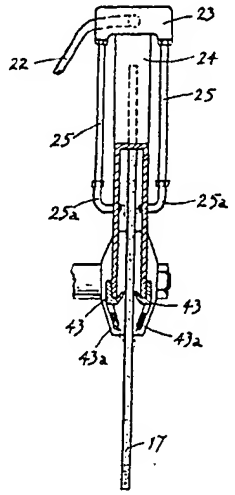


Fig. 2.

Fig. 3.

SHEET 2

Fig 4



[This Drawing is a reproduction of the Original on a reduced scale.]

H.M.S.O.(Ty.F.)